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Ron Khormaei

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INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

KIM, JUNG W

ART UNIT

PAPER NUMBER

2432

NOTIFICATION DATE

DELIVERY MODE

11/17/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/764,645	<b>Applicant(s)</b> KHORMAEI ET AL.	
	<b>Examiner</b> JUNG KIM	<b>Art Unit</b> 2432	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

1. This Office action is in response to the amendment filed on 5/12/08.
2. Claims 1-25 are pending.

### ***Response to Arguments***

3. Applicant's arguments with respect to the prior art rejections have been fully considered but they are not persuasive.

4. Applicant argues that Tresser does not disclose the limitation "submitting the initial digital file without intervening transformations directly to a predetermined halftoning process" of claim 1 because Tresser discloses that a new image (I') is first computed out of the original image (I) by covering the original image with a grid of size H-by-V, and then averaging the grey levels on the rectangles defined by the grid.

(Remarks, pgs. 14-15) This argument is not persuasive for the following reasons. On page 3, lines 6-8 of Applicant's Specification, digital halftoning process is defined by Applicant: "[d]igital halftoning can thus be defined as a collection of techniques employed by various computer-controlled display and printing devices for converting continuous-tone images into binary information for displaying the image." (emphasis added) Fig. 3 of Tresser illustrates an initial digital file I(i,j) that is converted into a new image file I'(h,v), by covering the image I(i,j) with a H-by-V grid and averaging over all rectangles of that grid the gray levels. I'(h,v) is then processed by a half-toning algorithm. Col. 8:56-9:7. Under Applicant's definition, Tresser expressly teaches the limitation "submitting the initial digital file without intervening transformations directly to a

predetermined halftoning process.” The process to create new image  $I'(h,v)$  as taught by Tressor is a technique employed by a computing device as part of a collection of techniques to convert the continuous-tone image into binary information, i.e.  $I(i,j)$  is the continuous-tone image, and the process to create  $I'(h,v)$  and the process to create  $M(h,v)$  are the techniques to create binary information. Hence, under the broadest reasonable interpretation requirement (MPEP 2111), the process to create  $I'(h,v)$  is part of the halftoning process as defined in claim 1.

5. Even assuming, *arguendo*, that the process to create  $I'(h,v)$  is not part of the halftoning process, Tressor describes  $I'(h,v)$  as a “new image,” which suggests to one of ordinary skill in the art that  $I'(h,v)$  is a distinct, initial digital file. Applicant’s arguments appear to suggest that this interpretation is merely hindsight reconstruction. See Fn. 1 on pg. 14. However, hindsight arguments are only pertinent against combination reconstructions, i.e. 35 USC 103(a), and do not have any weight with respect to novelty rejections. For these reasons, Tressor suggests the aforementioned limitation.

6. Applicant’s arguments that Tressor does not disclose “any digital halftone file that is ‘defined by a plurality of discrete digital values’ and the submission of the digital halftone file to a mathematical process of the type ‘involving each of the plurality of discrete digital values in the digital halftone file’” (Remarks, pg. 16-17) are not persuasive as well. Applicant points to a portion of Tressor that teaches a preferred method of signing digital data (i.e. RSA digital signatures are preferably signed using 1024 bits) to suggest that only a portion of the halftone file generated by the method Tressor is signed. However, this argument is insufficient for at least two reasons: First,

this portion of Tressor goes on to teach compressing the entire file using a secure hash algorithm to generate a fixed bit size, whereby the hash is then used to generate an RSA signature (col. 6, lines 22-25), which suggests to one of ordinary skill in the art to use the entire halftone file data to generate the signature; and second, Tressor does not disclose only using RSA to sign the halftone file, but merely suggest RSA as a possible signature scheme. (col. 9, lines 17-19) Hence, Applicant's arguments are not persuasive.

7. Applicant's remaining arguments are derivative of those discussed above.
8. For the aforementioned reasons, the claims remain rejected under the prior art of record.

***Claim Rejections - 35 USC § 102***

9. Claims 1-11 and 14-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Tresser et al. USPN 6,804,373 (hereinafter Tresser).

10. As per claims 1-6, Tresser discloses a method of generating an authentication key for an electronic document file representative of a document, the method comprising:

- a. providing the electronic document file as an initial digital file; (col. 8:56-9:3)
- b. submitting the initial digital file without intervening transformation directly to a predetermined halftoning process, thereby to generate a digital halftone file; and (9:4-7 and lines 40-44:  $I(i,j)$  is converted to  $I'(h,v)$  by averaging gray levels over rectangles of a grid covering image  $I$ ;  $I'(h,v)$  is converted to  $M(h,v)$  by a halftoning process)

- c. submitting the digital halftone file to a predetermined mathematical process to thereby generate the authentication key; (9:7-32; information from M is signed)
  - d. printing the digital halftone file to provide a tangible copy of the document, and printing with the tangible copy of the document a visible representation of the authentication key; (9:66-10:5; a scannable signature is embedded in the image)
  - e. displaying the digital halftone file on a user display to provide a visible copy of the document and the authentication key; (10:61-64)
  - f. wherein the halftoning process is based, at least in part, on an error diffusion halftoning algorithm; (5:30-31 and lines 41-44)
  - g. wherein the halftoning process is based, at least in part, on one of a matrix-based halftoning algorithm, a pattern-based halftoning algorithm, or an ordered-dither halftoning algorithm; (5:15-41; 9:4-7) and
  - h. wherein the predetermined mathematical process is a summation process. (6:6-25)
11. As per claims 7-11, Tresser discloses a method of authenticating an electronic document file representative of a document, the method comprising:
- i. receiving the electronic document file as an initial received digital file; submitting the initial received digital file without intervening transformation directly to a predetermined halftoning process, thereby to generate a digital halftone file defined by a plurality of discrete digital values; submitting the digital halftone file to a mathematical process involving each of the plurality of discrete

digital values in the digital halftone file, thereby produce a receiver-generated authentication key for the initial received digital file; and using the receiver-generated authentication key to verify the authenticity of the initial received digital file relative to the electronic document file; wherein the step of using the receiver-generated authentication key comprises: receiving a sender-generated authentication key for the electronic document file; and comparing the sender-generated authentication key to the receiver-generated authentication key; and accepting the authenticity of the initial received digital file relative to the electronic document file, when the sender-generated and the receiver-generated authentication keys are identical; (col. 6:15-26, RSA signatures are generated using a hash of the digital data; 9:63-10:48, especially 10:36-41; the inverse of the signature is a compressed version of  $N'$ ; embedded matrix  $M$  is necessarily transformed to compressed version of half tone  $N$ , whereby a match authenticates the document)

j. wherein the halftoning process is based, at least in part, on an error diffusion halftoning algorithm; (5:30-31 and lines 41-44)

k. wherein the halftoning process is based, at least in part, on one of a matrix-based halftoning algorithm, a pattern-based halftoning algorithm, or an ordered-dither halftoning algorithm; and (5:15-41; 9:4-7)

l. wherein the predetermined mathematical process is a summation process. (6:6-25)

12. As per claim 14, Tresser discloses a system to generate an authentication key for an electronic document file representative of a document, the system comprising: a processor; and a computer readable memory device readable by the processor (fig. 7 and related text), the computer readable memory device containing a series of computer executable steps configured to cause the processor to: retrieve a copy of the electronic document file as an initial digital file (col. 8:56-9:3); submit the initial digital file without intervening transformation directly to a predetermined halftoning process, thereby to generate a digital halftone file (9:4-7 and lines 40-44); submit the digital halftone file to a predetermined mathematical process to thereby generate the authentication key (9:17-19 and lines 25-32); and store a copy of the authentication key in the computer readable memory device. (fig. 3, reference no. 380; 10:53-54)

13. As per claim 15, Tresser further discloses wherein the processor and the computer readable memory device are resident within a document printing device. (col. 1:10-12; fig. 7, reference no. 739)

14. As per claim 16, Tresser further discloses wherein the series of computer executable steps are further configured to cause the processor to print a tangible copy of the halftone image file as the document, and to include the authentication key on the tangible copy of the halftone image file. (Col. 9:66-10:5)

15. As per claim 17, Tresser further discloses wherein the computer readable memory is configured to store, at least temporarily, a copy of the electronic document file as the initial digital document file. (fig. 3, reference no. 380; 10:53-54)



16. As per claim 18, Tresser discloses the system further comprising a user display, and wherein the series of computer executable steps are further configured to cause the processor to display the authentication key on the user display. (Col. 10:61-64)

***Claim Rejections - 35 USC § 103***

17. Claims 12 and 13 are rejected under 35 USC 103(a) as being unpatentable over Tresser in view of Linsker et al. USPN 5,598,473 (hereinafter Linsker).

18. As per claims 12 and 13, the rejections of claims 9 and 10 as being anticipated by Tresser are incorporated herein. Tresser does not disclose wherein the electronic document file is received from a sender via a network and wherein the sender authentication key is received via one of telephone or facsimile. Linsker discloses using an authentication key to verify the integrity of a fax transmission from a sender to a receiver. The authentication key is based on a digest of a digital document and signature of the digest, which is appended to the document and faxed to the receiver. The receiver recovers the first digest from the signature then performs an operation on the digital document to create a second digest, wherein a match between the first and second digest shows that the document is authentic. Col. 6:33-8:15. It would be obvious to one of ordinary skill in the art at the time the invention was made for the electronic document file of Tresser to be received from a sender via a network and wherein the sender authentication key is received via one of telephone or facsimile. One would be motivated to do so to ensure the authenticity of documents transmitted via fax using an authentication key derived from halftoning digital information, a process that provides the requisite security, whether or not the document was scanned properly.

(Linsker, 1:43-55; Tresser, 3:49-55) The aforementioned cover the limitations of claims 12 and 13.

19. Claims 19, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tresser in view of Brundage et al. US Patent Application Publication No.

20040181671 (hereinafter Brundage).

20. As per claim 19, Tresser discloses a system for authenticating an electronic document file representative of a document, the system comprising: a processor; a computer readable memory device readable by the processor (fig. 7 and related text) and configured to receive the electronic document file as an initial received digital file; the computer readable memory device containing a series of computer executable steps configured to cause the processor to: store the initial received digital file in the computer readable memory device; submit the initial digital file without intervening transformation directly to a predetermined halftoning process, thereby to generate a digital halftone file defined by a plurality of discrete digital values; submit the digital halftone file to a predetermined mathematical process involving each of the plurality of discrete digital values in the digital halftone file to thereby produce a receiver-generated authentication key for the initial received digital file. (col. 6:15-26, RSA signatures are generated using a hash of the digital data; col. 9:63-10:48, especially 10:36-41; the inverse of the signature is a compressed version of  $N'$ ; embedded matrix  $M$  is transformed to compressed version of half tone  $N$ , a match authenticates the document)

21. Tresser does not disclose displaying a copy of the receiver-generated authentication key on one of a printer or a user display. Brundage discloses a system

for authenticating identification documents using a watermark, wherein an authenticator displays the watermark information to a user to allow an inspector or officer to visually compare the watermark information against information printed on the document.

Paragraph 62. It would be obvious to one of ordinary skill in the art at the time the invention was made to display a copy of the receiver-generated authentication key on one of a printer or a user display. One would be motivated to do so to enable a human to quantify the authenticity of the document as taught by Brundage, *ibid.* The aforementioned cover the limitations of claim 19.

22. As per claim 22, the rejection of claim 19 under 35 USC 103(a) as being unpatentable over 35 USC 103(a) is incorporated herein. In addition, Tresser discloses wherein the processor and the computer readable memory device are resident within a document printing device. (col. 1:10-12; fig. 7, reference no. 739)

23. As per claim 23, Tresser discloses an system to authenticate an electronic document file, comprising:

m. a sender computer configured to provide the electronic document file in the form of a sender initial digital file; a sender printer configured to: receive the sender initial digital file; submit the sender initial digital file without intervening transformation directly to a predetermined halftoning process, thereby to generate a first digital halftone file; submit the first digital halftone file to a predetermined mathematical process to thereby generate a sender authentication key; and display the sender authentication key to a sender; (col. 8:56-9:44; 10:61-64)

n. a receiver computer configured to receive the electronic document file from the sender as a receiver initial digital file; a receiver printer configured to: receive the receiver initial digital file; submit the receiver initial digital file without intervening transformation directly to the predetermined halftoning process, thereby to generate a second digital halftone file; submit the second digital halftone file to the predetermined mathematical process to thereby generate a receiver authentication key. (col. 9:63-10:48, especially 10:36-41; the inverse of the signature is a compressed version of N'; embedded matrix M is transformed to compressed version of half tone N, a match authenticates the document)

24. Tresser does not disclose displaying a copy of the authentication key to a user via one of a printer or a user display. Brundage discloses a system for authenticating identification documents using a watermark, wherein an authenticator displays the watermark information to a user to allow an inspector or officer to visually compare the watermark information against information printed on the document. Paragraph 62. It would be obvious to one of ordinary skill in the art at the time the invention was made to display a copy of the authentication key to a user via one of a printer or a user display. One would be motivated to do so to enable a human to quantify the authenticity of the document as taught by Brundage, *ibid*. The aforementioned cover the limitations of claim 23.

25. Claims 20, 21, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tresser in view of Brundage and further in view of Linsker.

26. As per claims 20 and 21, the rejection of claim 19 under 35 USC 103(a) as being unpatentable over Tresser and Brundage are incorporated herein. Tresser does not disclose the system further comprising a modem configured to process the initial received digital file from a sender and communicate the initial received digital file to the computer readable memory device by way of the processor; and one of a telephone or a facsimile machine configured to receive a sender-generated authentication key for the electronic document file capable of being compared to the receiver-generated authentication key to authenticate the initial received digital file relative to the electronic document file. Linsker discloses using an authentication key to verify the integrity of a fax transmission from a sender to a receiver. The authentication key is based on a digest of a digital document and signature of the digest, which is appended to the document and faxed to the receiver. The receiver recovers the first digest from the signature then performs an operation on the digital document to create a second digest, wherein a match between the first and second digest shows that the document is authentic. Col. 6:33-8:15. It would be obvious to one of ordinary skill in the art at the time the invention was made for the system of Tresser to further comprise a modem configured to process the initial received digital file from a sender and communicate the initial received digital file to the computer readable memory device by way of the processor; and one of a telephone or a facsimile machine configured to receive a sender-generated authentication key for the electronic document file capable of being compared to the receiver-generated authentication key to authenticate the initial received digital file relative to the electronic document file. One would be motivated to

do so to ensure the authenticity of documents transmitted via fax using an authentication key derived from halftoning digital information, a process that provides the requisite security, whether or not the document was scanned properly. (Linsker, 1:43-55; Tresser, 3:49-55) The aforementioned cover the limitations of claims 20 and 21.

27. As per claims 24 and 25, the rejection of claim 23 under 35 USC 103(a) as being unpatentable over Tresser and Brundage are incorporated herein. Tresser does not disclose the system further comprising a network connection configurable to allow the sender computer to send the sender initial digital file to the receiver computer; and a sender telephone and a receiver telephone together allowing the sender to communicate the sender authentication key to the receiver; or a sender facsimile machine and a receiver facsimile machine together allowing the sender to communicate the sender authentication key to the receiver. Linsker discloses using an authentication key to verify the integrity of a fax transmission from a sender to a receiver. The authentication key is based on a digest of a digital document and signature of the digest, which is appended to the document and faxed to the receiver. The receiver recovers the first digest from the signature then performs an operation on the digital document to create a second digest, wherein a match between the first and second digest shows that the document is authentic. Col. 6:33-8:15. It would be obvious to one of ordinary skill in the art at the time the invention was made for the system of Tresser to further comprise a network connection configurable to allow the sender computer to send the sender initial digital file to the receiver computer; and a sender telephone and

a receiver telephone together allowing the sender to communicate the sender authentication key to the receiver; or a sender facsimile machine and a receiver facsimile machine together allowing the sender to communicate the sender authentication key to the receiver. One would be motivated to do so to ensure the authenticity of documents transmitted via fax using an authentication key derived from halftoning digital information, a process that provides the requisite security, whether or not the document was scanned properly. (Linsker, 1:43-55; Tresser, 3:49-55) The aforementioned cover the limitations of claims 24 and 25.

### ***Conclusion***

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Communications Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUNG KIM whose telephone number is (571)272-3804. The examiner can normally be reached on FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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